



U.S. Department of Energy
Energy Efficiency and Renewable Energy

Test Procedures for Distribution Transformers

SNOPR Public Meeting

Definition of Basic Model

**Building Technologies Program
Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy**

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Basic Model Overview

- **Purpose: to reduce testing burden by enabling Manufacturers to group products having essentially identical characteristics with respect to energy consumption into a single Basic Model**
- **Basic Model is the finest level of disaggregation at which manufacturers rate the efficiency of a distribution transformer**
- **Manufacturers rate efficiency of each Basic Model by either testing a representative sample or applying a substantiated AEDM**
 - **Uniform Test Method for Measuring Energy Consumption**
 - **Alternative Efficiency Determination Method (AEDM)**
 - **Note: Basic Model is used to substantiate an AEDM**



Changes from the Previous Basic Model Definition

- **Essentially the same as proposed in the NOPR, with a requirement that a Basic Model should “not have any differentiating electrical, physical or functional features that affect energy consumption.”**
- **Omits the provision that transformers within a Basic Model must “operate within the same voltage range”, as this is encompassed in new requirement**
- **Revises a provision from “have a comparable nominal output power (kVA) rating” to “have the same standard kVA rating”**
- **Defines standard kVA ratings as those appearing in IEEE C57.12.00 and C57.12.01**
- **Stakeholders had sought basic model to be all designs having the same nominal kVA rating, however this is inconsistent with the nature of groupings the Basic Model is meant to permit**



Basic Model Definition

“Basic model means a group of distribution transformers manufactured by a single manufacturer, that have the same insulation type (i.e., liquid-immersed or dry-type), have the same number of phases (i.e., single or three), have the same standard kVA rating, and do not have any differentiating electrical, physical or functional features that affect energy consumption.”

Standard kVA Ratings for Distribution Transformers

Single Phase		Three Phase	
kVA			
10*	167	15	300
15	250	30	500
25	333	45	750
37.5	500	75	1000
50	667	112.5	1500
75	833	150	2000
100		225	2500

* In the Department's current definition of a distribution transformer, 10kVA is a standard rating for liquid-immersed transformers



Other Issues?

- **An opportunity for stakeholders to discuss other issues related to the basic model definition for distribution transformers.**